इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 2252 (2001): Diacetone Alcohol [PCD 9: Organic Chemicals Alcohols and Allied Products and Dye Intermediates]

“ज्ञान से एक नये भारत का निर्माण”
Satyanarayan Gangaram Pitroda
“Invent a New India Using Knowledge”

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”
Bhartṛhari—Nītiśatakam
“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

IS 2252 : 2001

(Reaffirmed 2005)

भारतीय मानक

डाईएसीटोन ऐल्कोहॉल — विशिष्टि

(तीसरा पुनरीक्षण)

Indian Standard

DIACETONE ALCOHOL — SPECIFICATION

(Third Revision)

ICS 71.080.80

© BIS 2001

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 2001 **Price Group 2**

Alcohols and Allied Products Sectional Committee, PCD 10

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Alcohols and Allied Products Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was earlier revised in 1981. The Committee responsible for the formulation of this standard decided to revise the same again in the light of the experience gained over the years so as to align it with the latest development in technology. A new requirement of distillation range has been included. The requirement for residue on evaporation has been replaced by the requirement for non-volatile matter. The requirements for water content and colour have been modified. The requirements of flash point and refractive index have been deleted.

Diacetone alcohol is a pale straw colour liquid with non-residual odour. It is soluble in water. It is used as a solvent for variety of products, such as cellulose acetate, nitrocellulose, vinyl chloride; acetate resins, epoxy resins and also used for surface coating. Besides, it is used as a dyestuff solvent in the textile printing industry.

Considerable assistance has been derived from ASTM D 2677 : 1994 Specification for diacetone alcohol.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DIACETONE ALCOHOL — SPECIFICATION

(Third Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for diacetone alcohol suitable for industrial use.

2 NORMATIVE REFERENCES

The following standards contain provisions, which through reference in this text constitute the provisions of the standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below:

IS No.	*Title*
229 : 1993	Ethyl acetate (*third revision*)
878 : 1975	Graduated measuring cylinders (*first revision*)
1070 : 1992	Reagent grade water (*third revision*)
2552 : 1989	Steel drums (galvanized and ungalvanized) (*third revision*)
5298 : 1983	Method of determination of distillation range and of distillation yield (*first revision*)
8768 : 1986	Method of measurement of colour in liquid chemical products in Hazen units (*first revision*)

3 REQUIREMENTS

3.1 Description

Diacetone alcohol shall be a clear pale straw coloured liquid, free from sediments and also shall be free from matter in suspension and shall consist essentially of 4-hydroxy-4-methylpentane-2-one (This name is approved by the International Union of Pure and Applied Chemistry) [$CH_3COCH_2C(OH)(CH_3)_2$].

3.2 Miscibility with Water

It shall be miscible with water in all proportion.

3.3 The material shall also comply with the requirements given in Table 1 when tested according to the methods prescribed in Annex A to E.

4 PRECAUTION IN HANDLING

4.1 Diacetone alcohol is considered as practically non-toxic but splashes in the eye cause irritation and can result in injury. Eye shields should be worn during handling operations. Splashes in the eye should be removed immediately by washing with copious quantities of water.

5 PACKING AND MARKING

5.1 Packing

The material shall be packed in containers as agreed to between the purchaser and the supplier, subject to provisions of law in force at the time.

Table 1 Requirements for Diacetone Alcohol

(*Clause* 3.3)

Sl No.	Characteristic	Requirements	Method of Test, Ref to	
			Annex	IS No.
(1)	(2)	(3)	(4)	(5)
i)	Colour, Pt-Co scale hazen units, *Max*	50	—	8768
ii)	Relative density, 27°/27°	0.931 to 0.937	A	—
iii)	Distillation range:			
	a) Initial boiling point[1], 760 mm Hg, *Min*	145°C	B	—
	b) Dry point, 760 mm Hg, *Max*	172°C		
iv)	Water content, percent by mass, *Max*	0.2	C	—
v)	Acidity (as acetic acid) percent by mass, *Max*	0.02	D	—
vi)	Non-volatile matter gm/100 ml, *Max*	0.01	E	—

[1] In order to avoid an erratic value for the initial boiling point the distillation flask should be clean and free from any residual carbon deposit. This suggestion is specifically applicable to diacetone alcohol. Particular care should be given to the heating rate so that the initial boiling point is obtained within 5 to 10 minutes.

5.1.1 The container shall be made of materials such as steel (*see* IS 2552) and aluminum. They shall withstand untoward corrosion and shall be free from impurities harmful to the end use of the material.

5.2 Marking

The container shal! be suitably marked with the following information:

a) Name of the material;
b) Net mass of the material in the container;
c) Name of the manufacturer and his recognized trademark if any;
d) Batch number or lot number, in code or otherwise; and
e) Date of manufacture.

5.2.1 *BIS Certification Marking*

The containers may also be marked with the Standard Mark.

5.2.1.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 SAMPLING

6.1 Representative samples of the material shall be drawn as prescribed in Annex F of IS 229.

6.2 Criteria for Conformity

The lot shall be declared as conforming to the standard, if the test results of the composite test sample satisfy the requirements prescribed under 3.2. Otherwise the lot shall be rejected.

7 QUALITY OF REAGENTS

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in the tests.

NOTE — 'Pure Chemicals' shall mean chemicals that do not contain impurities, which affect the results of analysis.

ANNEX A

[*Table* 1, *Sl No.* (ii)]

RELATIVE DENSITY

A-1 OUTLINE OF THE METHOD

In this standard mass of equal volumes of the material and water are compared at 27°C.

A-2 APPARATUS

A-2.1 Relative Density Bottle — 25 ml capacity.

A-2.2 Water Bath — Maintained at 27.0 ± 0.2°C.

A-2.3 Thermometer — Any convenient thermometer of a suitable range with 0.1°C or 0.2°C subdivisions.

A-3 PROCEDURE

Clean and dry the relative density bottle. Weigh and fill with recently boiled and cooled water at 27°C. Fill to overflowing by holding the relative density bottle on its side in such a manner as to prevent entrapment of air bubbles. Insert the stopper and immerse in the water-bath. Keep the entire bulb covered with water and hold at that temperature for 30 minutes. Carefully remove any water, which has exuded from the capillary opening. Remove from the bath, wipe completely, dry and weigh. Again clean and dry the relative density bottle. Using the material under test, proceed exactly as in the case of water and weigh the bottle with the material.

A-4 CALCULATION

$$\text{Relative density at } 27°/27°\text{C} = \frac{M_1 - M_2}{M_3 - M_2}$$

where

M_1 = mass in g of the relative density bottle with the material,
M_2 = mass in g of the relative density bottle, and
M_3 = mass in g of the relative density bottle with water.

ANNEX B

[*Table* 1, *Sl No.* (iii)]

DETERMINATION OF DISTILLATION RANGE

B-1 PROCEDURE

Determine the distillation range by the procedure as prescribed in IS 5298 applying following corrections.

B-1.1 Correction for Thermometer Reading

B-1.1.1 Error of Scale

In all the thermometer readings, make the corrections as indicated on the certificate of the thermometer.

B-1.2 Correction for Barometric Pressure

If the barometric pressure prevailing during the determination is 760 mm Hg, no correction need be applied to the specified temperature and the thermometer scale as corrected for error of scale may be used as such. If however the prevailing barometric pressure deviates from 760 mm Hg, the specified temperature shall also be corrected as follows:

a) For every mm above 760 mm Hg, subtract 0.05°C from the specified temperature; and

b) For every mm below 760 mm Hg, add 0.05°C to the specified temperature.

NOTE — These corrections are valid only for pressure above 700 mm Hg.

ANNEX C

[*Table* 1, *Sl No.* (iv)]

DETERMINATION OF WATER CONTENT

C-1 GENERAL

Water is determined by the Karl Fischer method.

C-2 PROCEDURE

Take about 20 g of the material, weigh accurately and determine the water content by the procedure given in IS 2362.

ANNEX D

[*Table* 1, *Sl No.* (v)]

DETERMINATION OF ACIDITY AS ACETIC ACID

D-1 OUTLINE OF THE METHOD

The material is titrated with standard sodium hydroxide solution to the phenolphthalein end point and from the volume of standard sodium hydroxide solution, used acidity is calculated as acetic acid.

D-2 REAGENTS

D-2.1 Sodium Hydroxide Solution — Approximately 0.01 N.

D-2.2 Hydrochloric Acid — Approximately 0.01 N.

D-2.3 Phenolphthalein Indicator — 0.5 percent (*m/m*) in *iso*-propyl alcohol or in rectified spirit.

D-2.4 Neutralized Freshly Boiled and Cooled Distilled Water — By adding 0.01 N NaOH drop-wise to the phenolphthalein indicator end point and further neutralize excess of NaOH by adding drop-wise 0.01 N HCl till colourless.

D-3 PROCEDURE

Weigh accurately about 100 g of the material to the nearest 0.1g in a 500-ml conical flask. Add 50 ml of neutralized distilled water and few drops of phenolphthalein indicator. Titrate with 0.01 N sodium hydroxide solution using a microburette, until the pink colour persists for 15 seconds.

D-4 CALCULATION

$$\text{Acidity (as acetic acid), percent by mass} = \frac{6 \times V \times N}{M}$$

where

V = Volume in ml of standard sodium hydroxide solution,

N = Normality of standard sodium hydroxide solution, and

M = Mass in g of the material taken for the test.

ANNEX E

[*Table* 1, *Sl No.* (vi)]

DETERMINATION OF NON VOLATILE MATTER

E-1 PROCEDURE

With a graduated measuring cylinder (*see* IS 878) introduce 100 ml of the sample into a 125-ml weighed to the constant mass, platinum, silica or borosilicate glass evaporating dish, previously heated to constant mass at a temperature of 105 to 110°C and cooled in a desiccator. Evaporate the sample to dryness on a hot water bath and place the dish in an oven at a temperature of 100 ± 2°C. Cool the dish in a desiccator and weigh along with non-volatile matter to the nearest 0.1 mg. The difference in mass in g gives g/100 ml of the non-volatile matter.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc : No. PCD 10 (1528).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters :

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002
Telephones : 323 01 31, 323 33 75, 323 94 02

Telegrams : Manaksanstha
(Common to all offices)

Regional Offices :		Telephone
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110 002	323 76 17 323 38 41
Eastern	: 1/14 C. I. T. Scheme VII M, V. I. P. Road, Kankurgachi CALCUTTA 700 054	337 84 99, 337 85 61 337 86 26, 337 91 20
Northern	: SCO 335-336, Sector 34-A, CHANDIGARH 160 022	60 38 43 60 20 25
Southern	: C. I. T. Campus, IV Cross Road, CHENNAI 600 113	235 02 16, 235 04 42 235 15 19, 235 23 15
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400 093	832 92 95, 832 78 58 832 78 91, 832 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM.

Printed at : Prabhat Offset Press, New Delhi-2